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CEREAL AND FORAGE INSECT INVESTIGATIONS

W. R. Walton, Entomologist in Charge

An international conference on insects of international importance to the Northwestern States and the Prairie Provinces of Canada was held at Winnipeg, Manitoba, on April 18 and 19. The Bureau of Entomology was represented by W. R. Walton and Stewart Lockwood. The other American entomologists present were Prof. R. L. Webster, Prof. A. G. Ruggles, and Prof. H. C. Severin. The Canadian entomological staff was represented by Arthur Gibson, R. C. Treherne, E. H. Strickland, H. L. Seamans, Norman Criddle, K. M. King, A. V. Mitchener, and H. P. Tullis. The meeting was addressed by Deputy Minister of Agriculture Davis, of Manitoba, and also by the Acting President of the Agricultural College. The principal subjects discussed were grasshoppers, the western wheat-stem sawfly, the pale western cutworm, and the occurrence of the Hessian fly in Canada. Plans were perfected for the conduct of experimental work in the control of these insects, to be carried on in such a manner as to render the results comparable in all the districts involved. A base map of the international territory involved has been prepared for the purpose of plotting the occurrence of the principal insect pests of common importance to Canada and the United States.

On the evening of the 19th W. R. Walton gave a lecture before the Manitoba Natural History Society at the University of Manitoba on the subject of "Some Phases of Insect Parasitism," a purely popular treatment of the subject which will subsequently be published in the Canadian Field Naturalist.

The conference determined to meet at Bozeman, Mont., during April, 1924. The officers elected for the ensuing year were Norman Criddle, chairman, and R. A. Cooley, secretary.

H. P. Wood, who has been engaged in the corn-borer investigations during the past two years, resigned April 30 to enter other employment.

Prof. George A. Dean, of the Kansas Agricultural college, Manhattan, visited this office April 24. Professor Dean was in Washington to attend the meeting of the National Research Council.

During the past year the work of rearing and liberating an important parasite of the corn borer, Habrobracon brevicornis Wesmael, has been very successful, and this parasite has been liberated in numbers exceeding 1,000,000 individuals in the densely infested area in New England. In view of the success achieved in rearing this parasite, it was believed that it might be worth while

to attempt to introduce it into the intensely infested areas of southern Ontario, and a suggestion to this effect was made to the Dominion Entomologist, Arthur Gibson, who recently has been authorized to employ an assistant for this purpose. With this end in view, A. B. Baird recently visited the Arlington, Mass., laboratory and was instructed in the technique necessary for the handling of this parasite. Mr. Baird will soon proceed to southern Ontario to conduct the preliminary work necessary for the rearing and introduction of this parasite into Canada.

Several other promising parasites of the corn borer have been received from Dr. W. R. Thompson, located in France, and are being reared by Detmar W. Jones of the Arlington laboratory. Mr. Jones has shown great ingenuity in perfecting the technique for the successful rearing of these insects, and at least one additional promising species will soon be ready for liberation.

SOUTHERN FIELD CROP INSECT INVESTIGATIONS .

J. L. Webb, Entomologist Acting in Charge

The third deficiency bill enacted by Congress during its closing sessions made available, on March 4, an appropriation of $40,000 for the investigation, in cooperation with the War Department, of the use of airplanes in applying arsenical dust poisons to the cotton plant for control of the boll weevil. After considerable delay, three planes arrived at Tallulah, La., about the middle of April. Preliminary work in perfecting mechanical equipment is now proceeding.

In February, a force of statisticians from the Office of Crop Estimates, Bureau of Agricultural Economics, visited the Delta Laboratory at Tallulah for the purpose of making a statistical study of the influence of various factors in the control of the boll weevil in cooperation with the entomologists stationed at the laboratory.

The results of the work of the Bureau of Entomology on insects affecting dairy cattle will be shown at the National Dairy Exhibit to be held at Syracuse, N. Y., next October. Practically every bureau in the department will have some part in the exhibit. It is expected that one booth will be devoted to entomological problems.

The Secretary of Agriculture visited the Dallas, Tex., laboratory of this bureau, of which F. C. Bishopp is in charge, on March 23. This is the main laboratory for the investigation of insects affecting domestic animals.

Dr. W. D. Hunter addressed the annual meeting of the Texas Cotton Association at Dallas, Tex., on March 24.

Doctor Hunter spent a few days in Washington during the early part of April in connection with the work of the Federal Horticultural Board and the general administrative work of Southern Field Crop Insect Investigations in the Bureau.

A. C. Morgan spent a few days in Washington in the early part of April for conference with the chief of bureau and with Doctor Hunter.

FRUIT INSECT INVESTIGATIONS

A. L. Quaintance, Entomologist in Charge

Dr. A. C. Baker will assist Dr. Quaintance in administrative work in the office of Fruit Insect Investigations. He will continue as custodian of the aphid and aleurodid collections, and will have time to pursue his studies in these families. A. C. Mason, under Doctor Baker's supervision, will devote all his time to the aphididae.

Fred E. Brooks, in charge of the bureau laboratory at French Creek, W. Va., writes (April 14) that this field station, which is situated at an elevation of 1,650 feet, experienced unusual cold during the first half of April. On the morning of April 1 the temperature was 7 degrees above zero and on the 10th, 11th, and 12th heavy frosts occurred, the temperature dropping to 25 degrees. Vegetation of all kinds is backward. Apple buds are not yet showing the white of the petals and apparently can not open before the 20th. The cool weather, however, does not seem to have greatly retarded the activities of the various borers which attack apple. Larvae of the roundheaded apple-tree borer, Saperda candida, are feeding and ejecting fresh castings through the bark. About half the maturing individuals have pupated. Flat-headed borers, Chrysobothris femorata, are just beginning to pupate. Many are being destroyed by the parasite Phasgonophora sulcata. All maturing individuals of the apple root-borer, Agrilus vittaticollis, have pupated, while the spring brood of the chief parasite of the species, Xylophruridea agrili, is now on the wing. All these activities are taking place at about the normal time. Failure to collect either plum curculois, Conotrachelus nenuphar, or plum gougers, Anthonomus scutellaris, in jarring plum trees on April 14 indicates that these species have not yet emerged from hibernation. Chestnut weevils are to be found in the soil in great numbers, their abundance evidently being due to the favorable opportunities for multiplying which have been afforded by consecutive crops of chestnuts in 1920, 1921, and 1922. Should chestnut trees bear the coming season, there is good reason for believing that the nuts will be very wormy.

O. I. Snapp, in charge of the bureau laboratory at Fort Valley, Ga., reports that the curculio-suppression campaign waged in Georgia since the insect took such a heavy toll from the peach growers in 1920 has evidently greatly reduced the general infestation. Jarring records kept since 1920 show that the maximum number of beetles collected on any one morning to April 15 of each year is as follows: 1921, 2,392 beetles; 1922, 534 beetles; and 1923, 138 beetles. This general reduction in the infestation has been reflected in the better quality of the crop each year since 1920. The 1923 campaign of curculio suppression is well under way, and all growers are uniting in their efforts to enforce the various control measures. The second application of arsenate of lead is now being applied. Examinations of curculio winter-hibernation cages, providing different types of hibernating quarters, show the following percentages of appearance to April 15: Bermuda grass, 67; oak leaves, 61.5; Spanish moss, 48; pine needles, 38; sticks and trash, 22.5, and bare ground (no hibernating quarters), 6.75 per cent. The first plum curculio egg of

the season of 1923 was observed in fruit in the field on April 5. This is later than normally on account of the late season. Cool and rainy weather has also held the beetles in hibernation unusually late.

C. H. Hadley, in charge of the Japanese beetle laboratory of the bureau at Riverton, N. J., writes that recent examinations in the field have shown no appreciable grub mortality as a result of weather conditions during the winter just past. Occasional spots have been found where there has been comparatively slight mortality during the winter, but the mortality has been so low as to have no practical importance. A material increase in density of infestation by the beetle throughout the heavily infested area, and probably a corresponding increase in density throughout the entire infested area, may therefore be anticipated for the coming season.

Arrangements have been practically completed as a result of which Alexander Znamensky will be employed for a year in conducting investigations in Southern Russia to determine whether parasite material can be found there for shipment to the territory in New Jersey infested by the Japanese beetle. Mr. Znamensky is a Russian entomologist of considerable experience and training, and while engaged in this investigation will be located at Poltava, or at Stavropol. Throughout this region species of Anisoplia are known to occur. They are closely related to the Popillia group, and it is hoped that species of parasites working on the Anisoplia in that district may be successfully shipped to this country, and that they will attack the Japanese beetle.

A revision of the Japanese beetle quarantine regulations has just been issued, effective April 15, 1923, which enlarges the area subject to quarantine on account of this insect, and which materially changes the methods of quarantine enforcement heretofore employed, particularly with reference to the shipment of farm products covered by the quarantine. An emergency appropriation of $25,000 for the remainder of the present fiscal year was granted by Congress for the control and prevention of spread of the Japanese beetle.

The following men have received temporary appointment for service in connection with quarantine enforcement against the Japanese beetle: F. H. Wersinger, Jr.; G. B. Stichter; and C. H. Buckman. Mr. L. L. Goolden has also received temporary appointment on State funds for service in connection with insecticide investigations.

FOREST INSECT INVESTIGATIONS

T. E. Snyder, Entomologist Acting in Charge

J. E. Patterson has reported recent defoliations of pine timber on the Klamath Indian Reservation by the larvae of a moth, <u>Coloradia</u> <u>pandora</u> Blake. Areas of heavy defoliation of pine were found. The insect can be controlled by the use of fire during the feeding period of the larvae. Ground debris is fired and

burned under the infested trees, which causes the caterpillars to become stupefied and fall to the ground. Great precautions should be taken to prevent forest fires. The pupae of the moth were used as food by the Klamath and Modoc tribes of Indians and were considered a delicacy when roasted. It is believed that this is the first record of the use of pupae as food by western Indians.

On the Southern Oregon-Northern California Cooperative Control Project, to control an epidemic of the western pine beetle, Dendroctonus brevicomis Lec., F. P. Keen reports that spring work has already started and that five camps are now in operation with over 100 men on the pay roll. Other camps will be opened as fast as snow conditions and available labor supply will permit. Two hundred men are probably at work at the time this is being written.

Termites are very destructive to the woodwork of buildings and their contents in the United States. Of the 40 species occurring in this country, species of Reticulitermes are the most injurious to buildings. In the Southern and Gulf States, however, species of Kalotermes and Crytotermes are also injurious, and in the Southwestern States species of Kalotermes and Amitermes, as well as Reticulitermes, are injurious. On the Pacific Coast Reticulitermes and Kalotermes damage buildings. During the fiscal year 1922 this branch of the bureau gave advice in 118 cases in which termites had damaged the woodwork of buildings or their contents in the United States, and during the present fiscal year 74 cases of such damage have already been reported.

A destructive species of West Indian termite which breeds in dry solid wood seriously damaged the woodwork and furniture in a large hotel at Miami, Fla. The termites infesting the furniture were killed by placing it in the attic directly under the roof, where the sun's rays beat down. The temperature in the attic was from 17° to 24° F. higher than the maximum temperature recorded by the U. S. Weather Bureau.

STORED-PRODUCT INSECT INVESTIGATIONS

E. A. Back, Entomologist in Charge.

Doctor Back gave an address on insects attacking upholstered furniture before the National Association of Upholstered Furniture Manufacturers, on April 11, at the Hotel Traymore, Atlantic City, N. J.

TRUCK-CROP INSECT INVESTIGATIONS

F. H. Chittenden, Entomologist in Charge

E. Graywood Smyth, investigating the Mexican bean beetle for the bureau, sailed early in April for Puerto Barrios, Guatemala. From this point he will

proceed to the interior in an endeavor to obtain additional parasites of the Mexican bean beetle suitable for introduction into the eastern United States. The territory in eastern Guatemala, high and subtropical in character, should furnish parasites capable of living in the southeastern United States.

William D. Mecum, for several seasons employed by the bureau at Madison, Wis., has been temporarily re-employed as field assistant to assist J. E. Dudley, jr., in the pea-aphis investigations in Wisconsin.

Reporting upon the work of field cleaning in sweet-potato weevil eradication in Mississippi, K. L. Cockerham says that for several years this section of the Gulf Coast has not had sufficient cold weather to cause a general rotting of vegetation left in the fields. Therefore it was decided that sweet-potato fields which were infested with the sweet-potato weevil must be cleaned up and all scraps of tubers, vines, crowns, and general rubbish burned.

Beginning about the middle of January and continuing through February and the first half of March, a total of more than 180 farms, aggregating more than 175 acres of potato fields, were cleared of rubbish. This work was done in conjunction with the Mississippi State Plant Board, which furnished for the joint use of the State and Federal governments men who acted as foremen of crews, and also paid for the day labor. Regular day laborers were hired to do most of the plowing and raking. The Bureau of Entomology was in charge of the different territories.

In most instances the fields were plowed with an ordinary turning plow, all vines and waste material being turned over near the top of the soil. The labor crew followed these plows and raked out all parts of potatoes, vines, and crowns, and heaped them in piles across the fields. Then the refuse was piled in one large heap, saturated with kerosene, and set on fire. In most instances, however, the kerosene was not sufficient to burn completely these large piles of green vegetable matter. Fat pine from the near-by-cut-over lands was brought in and placed on these burning piles, and this usually completed the job of destruction.

This work not only destroys the overwintering weevil in its several stages, but also largely eliminates the volunteer-plant menace which must be combatted from May on through the summer months, as it has been found that many infestations hold over from year to year in this manner.

While great good was accomplished by this work, it is yet incompleted, and many farms were not cleaned because of lack of funds. It is planned next fall to clean thoroughly every field before harvest; yet unless more funds are available this will be impossible.

MISCELLANEOUS

(Items from the National Museum contributed by S. A. Rohwer)

B. Preston Clark, a specialist in Macrolepidoptera, spent Thursday, April

19, working in the National Museum on the collection of Lepidoptera and conferring with Mr. Schaus.

Dr. C. W. Woodward, director and chief entomologist of Kiangsu Province, China, spent Thursday, April 19, in the section of insects consulting some of the specialists in regard to specimens he collected. Doctor Woodward's headquarters are at Nanking and he has associated with him the following Chinese entomologists as well as other workers: Coey Park Jung, C. Francis Wu, and Hai-san Chang.

Beginning April 13, Dr. J. Chester Bradley of Cornell University spent seven days in the museum working on the collection of Hymenoptera and discussing a classification of the order with the various specialists. Doctor Bradley is preparing a classification of the Hymenoptera for Professor Comstock's new manual and in doing this he is seeking the cooperation of other workers, with the hope that they will be able to present an arrangement which will be generally acceptable to both American and European workers.

The question is often asked how many species of chiggers there are in North America. Based on the material submitted for identification through the channels of the bureau and the National Museum, Doctor Ewing finds that there is only one common species in North America. This species is Trombicula tlalzahuatl and is generally distributed in North America, ranging from New York State to Central America and from the Atlantic Ocean to the Rocky Mountains.

The museum has recently issued as Bulletin 124 a genotype list of the chalcid-flies. This paper was prepared by Mr. Gahan and Miss Fagan and includes the genera of this group as far as they are mentioned in the literature received in Washington up to July 1, 1921.

The museum has issued as Bulletin 123 a revision of the North American Microlepidoptera belonging to the subfamily Eucosminae. This bulletin has been prepared by Mr. Heinrich, contains descriptions of North American species with keys for their identification, and is illustrated by 59 plates showing characters of the male genitalia.

Albert Hertzell is working in the museum on the collection of the leaf-hopper genus Empoasca. Mr. Hertzell is doing this work for his doctor's thesis under the direction of Dr. Herbert Osborn of the Ohio State University, and his object in studying the material in the collection is to gain a knowledge of the distribution and also to benefit by an examination of the types.

Species of the buprestid genus Trachykele are rare in collections, the eastern species, Trachykele lecontei, being especially rare. Until recently the National Collection contained only three specimens of this species. On a week-end trip to Cape Henry, Va., Dr. E. A. Schwartz, H. S. Barber, and W. S. Fisher secured five more specimens of this rare species from cypress.

The National Museum has recently received, as an exchange from the British Museum, about 300 species of Old World Orthoptera. Most of these are new in the collection.

LIBRARY

Mabel Colcord, Librarian

New Books

Conference Internationale pour l'organisation de la lutte contre les sauterelles. Actes. Rome, Imprimerie de l'Institut International d'Agriculture, 1921. 171 p.

Ferreira d'Almeida, R. Mélanges lépidoptérologiques. Études sur les lépidoptères du Bresil. Berlin, R. Friedlander & Sohn, 1922. 226 p.

Floericke, Kurt. Heuschrecken und Libellen. Stuttgart, Kosmos Gesellschaft der Naturfreunde Geschaftstelle. Frankh'sche Verlagshandlung [c1922]. 76 p., illus.

Jameson, A. P. Report on the diseases of silkworms in India ... Calcutta, Supt. Govt. Print., 1922. 165 p., 7 pl. (2 col.), diagrs. Bibliography, p. 162-163.

Kansas Entomological Commission. Eighth biennial report, 1921-1922. Topeka, Kansas State Printing Plant, 1923. 20 p.

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Mason, F. A. The greenhouse grasshopper, Tachycines asynamorus Adel., a pest in conservatories and propagating houses. In Bureau of Bio-technology, Leeds, Bul. 8, p. 262-267, illus. January, 1923.

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Shaw, Norman. Manchurian tussore silk. London, Charles Odell [1912]. 43 p.

Texas Dept. of Agriculture. Bulletins 71, 73, 74. Austin, Texas, 1922-23. 71, Disinfecting cotton seed to prevent the spread of pink bollworm. R. E. McDonald & G. J. Scholl. 38 p. 73, The pecan in Texas ... insects, diseases... J. H. Burkett. 146 p. 74, The boll weevil, a review of methods of control. R. E. McDonald. 21 p.

Willis, J. C. Age and area, a study in geographical distribution and origin of species ... Cambridge, [Eng.], The University Press, 1922. 269 p., illus., diagrs. "List of literature," p. [247]-251.